Remarks

Claims 1-21 and 32-41 are presently at issue in this pending patent application. Claim 20 has been amended. Claims 32-41 have been added to claim subject matter included in the application. No new matter has been added. Reconsideration of the pending Claims and allowance is respectfully requested in view of the following comments.

The 35 U.S.C. §112 second paragraph Claim Rejections

Claim 20 stands rejected pursuant to 35 U.S.C. §112 second paragraph as being indefinite. In the office action mailed on September 3, 2004, Claim 20 was asserted to be unclear as to how the described elements were mounted. Claim 20 has been amended to clarify that the manifold is also mounted on the mounting plate. Claim 20 is now clear and definite, and Applicant respectfully requests removal of the 35 U.S.C. §112 second paragraph rejection of Claim 20.

The 35 U.S.C. 102(b) Claim Rejections

Pending Claims 1-6, 8-15, 17, 19 and 20 stand rejected pursuant to 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,306,022 to Tung et al. (hereinafter "Tung").

Claims 1-11

Claim 1 provides a pad conditioning system for conditioning a polishing pad in conjunction with a workpiece polishing operation. The pad conditioning system includes a pad conditioning head having a plurality of abrasive particles protruding from a surface of the pad conditioning head. The system also includes a positioning unit coupled with the pad conditioning head. The positioning unit is configured to move the surface into contact with a polishing pad. In addition, the system includes a liquid supply nozzle configured to selectively discharge liquid onto the abrasive particles that are in contact with the polishing pad to minimize frictional wear of the abrasive particles.

Tung discloses a conditioner 30 used in chemical mechanical polishing that includes a main body 32 having a lower surface 33 and an upper surface 35. (Figs. 3A and 3B) Around the rim of the lower surface are a plurality of mounting pads 34 with diamond granules mounted thereon, and a plurality of cavities 36. (Fig. 3A and Col. 3 lines 9-13) The cavities penetrate vertically through the main body to connect the lower surface and the upper surface. (Col. 3 lines 21-24) A first circular trench 40 and a plurality of second trenches 42 are cut into the upper surface of the main body. (Fig. 3B and Col. 3 lines 34-38) During

operation, de-ionized water is transfused into the first trench, flows through the second trenches, through the cavities to the mounting pads to dilute or remove the slurry. (Col. 3 lines 38-42) The de-ionized water flows into the space around the diamond granules to lower the density of the slurry and prevent separation of the diamond granules from the conditioner pads.

In contrast, to the cavities disclosed by Tung, Claim 1 describes a liquid supply nozzle. A "nozzle" is described by Websters Ninth New Collegiate Dictionary (1990) as "a short tube with a taper or constriction used to speed up or direct a flow of fluid." A cavity through a body that connects an upper surface of the body to a lower surface of the body as disclosed by Tung is not a short tube with taper or constriction as provided in Claim 1. (See specification Figs. 3 and 4) In addition, even if one somehow construed that the cavity of Tung was a liquid supply nozzle as described in Claim 1, which it clearly is not, Tung fails to suggest or disclose a conditioning head that includes an aperture formed in the surface with a liquid supply nozzle disposed in the aperture as provided in Claim 2. (See Specification Fig. 3) Tung also fails to disclose or suggest a manifold mounted on a pad conditioning head that comprises a liquid spray nozzle as described in Claim 3. (See specification Fig. 4)

Tung also discloses that de-ionized water flows through trenches cut in the upper surface of the main body, in contrast to a liquid supply line that extends through the pad conditioning head as disclosed in Claim 4. A "line" as described by Websters Ninth New Collegiate Dictionary (1990) as "a pipe for conveying fluid." Clearly the trenches disclosed by Tung are not pipes.

For at least the foregoing reasons, Claims 1, 2, 3 and 4 are patentably distinct over Tung. Further, dependent Claims 2-11 depend from Claim 1, and are also patentable over Tung for at least the same reasons. Applicant respectfully requests withdrawal of the 35 U.S.C. 102(b) rejection of Claims 1-11.

Claims 12-21

Claim 12 provides a pad conditioning system for conditioning a polishing pad in conjunction with a workpiece polishing operation. The pad conditioning system includes a liquid supply nozzle configured to discharge liquid in a predetermined area and a pad conditioning head positionable proximate to the liquid supply nozzle. The pad conditioning head includes a conditioning element upon which a plurality of abrasive particles are disposed. The conditioning element is configured to be pressed into and moved in a

determined pattern around a surface of a polishing pad to roughen the surface of the polishing pad with the abrasive particles. The liquid supply nozzle is configured to discharge liquid between the conditioning element and the polishing pad.

In contrast to the liquid supply nozzle described in Claim 12, Tung discloses cavities formed in the main body of a conditioner as previously discussed. In addition, Claim 12 describes a conditioning head postitionable proximate to a liquid supply nozzle. Clearly, cavities formed in the main body of a conditioner as disclosed by Tung are not positionable proximate to the conditioning head, since the cavities are holes formed directly in the body of the conditioner. In addition, as described in Claim 13, the liquid supply nozzle is coupled at the periphery of the conditioning element, which is contrary to the cavities of Tung that are formed by the conditioner body itself. Further, since Tung discloses only cavities in the body of the conditioner, a liquid supply nozzle disposed in an aperture formed on a conditioning element as provided in Claim 14 is not suggested or disclosed by Tung. Nor is a plurality of liquid supply nozzles disposed in a plurality of apertures as described in Claim 15 suggested or disclosed by Tung.

Amended Claim 20 describes a pad conditioning system in which, a liquid supply nozzle is in a manifold, and the pad conditioning head of Claim 12 comprises a mounting plate upon which the conditioning element of Claim 12 is mounted. The manifold is also mounted on the mounting plate. In contrast, Tung does not suggest or disclose a liquid supply nozzle or a manifold mounted on a mounting plate.

Thus, Claims 12, 13, 14, 15 and 20 are patentably distinct over Tung for at least the foregoing reasons. In addition, dependent Claims 13-21 depend from Claim 12, and are also patentable over Tung for at least the same reasons. Applicant respectfully requests withdrawal of the 35 U.S.C. 102(b) rejection of Claims 12-21.

The 35 U.S.C. 103(a) Claim Rejections

Claims 7 and 18 stand rejected pursuant to 35 U.S.C. §103(a) as being obvious in view of Tung. Claims 21 stands rejected pursuant to 35 U.S.C. §103(a) as being obvious in view of Tung and further in view of U.S. Patent No. 6,773,332 to Moore (hereinafter "Moore"). In addition, Claim 16 stands rejected pursuant to 35 U.S.C. §103(a) as being obvious in view of the combination of Tung and U.S. Patent No. 6,648,740 to Perlov et al. (hereinafter "Perlov").

With regard to Claim 21, a liquid supply line coupled with the liquid supply nozzle is described. The conditioning element of Claim 12 is configured to gimbal and the liquid supply line includes a gimbal coupling to relieve stress on the liquid supply line when the conditioning element gimbals. Moore teaches a conditioning body 150 that is coupled to an upright support 161 at a gimbal joint 163. However, neither Tung nor Moore disclose either a liquid supply line or a gimbal coupling included in the liquid supply line. Accordingly, neither of the cited references even contemplate stresses placed on a liquid supply line when a conditioning element gimbals. Thus, all of the claim features disclosed by Claim 21 are not suggested or disclosed by the cited combinations of the prior art and a *prima facie* case of obviousness has not been established. Accordingly, Applicant respectfully requests the removal of the 35 U.S.C. §103(a) rejection of Claim 21.

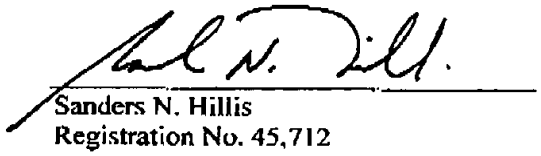
New Claims 32-41 are also not suggested or disclosed by any of the prior art of record.

Co-Pending Commonly-Owned Application

In an abundance of caution, Applicant hereby discloses for the Examiner's review commonly owned and co-pending patent application U.S. Serial No. 10/812,824. U.S. Serial No. 10/812,824 was filed on the same day as the present application.

The application is believed to now be in condition for allowance, which is respectfully requested. Should the Examiner deem a telephone conference to be beneficial in expediting examination and/or allowance of this application, the Examiner is invited to call the undersigned attorney at the telephone number listed below.

Respectfully Submitted,



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